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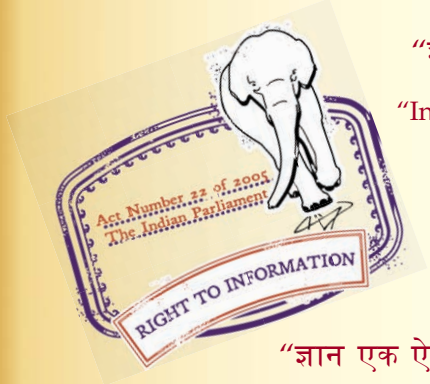
IS 6150 (1971): ISO Metric Screw Thread Measuring Prisms
[PGD 25: Engineering Metrology]



"ज्ञान से एक नये भारत का निर्माण"
Satyanarayan Gangaram Pitroda
"Invent a New India Using Knowledge"

"ज्ञान एक ऐसा खजाना है जो कभी चुराया नहीं जा सकता है"
Bhartṛhari—Nītiśatakam
"Knowledge is such a treasure which cannot be stolen"

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(Reaffirmed 1988)

Engineering Metrology Sectional Committee, EDC 43; Precision Measuring Equipment Subcommittee, EDC 43 : 2 [Ref : Doc : EDC 43 (1726)]

Indian Standard

SPECIFICATION FOR ISO METRIC SCREW THREAD MEASURING PRISMS

1. Scope — Requirements of screw thread measuring prisms, used for measuring the minor diameter of ISO metric external threads, ranging from 0·35 to 8 mm pitch.

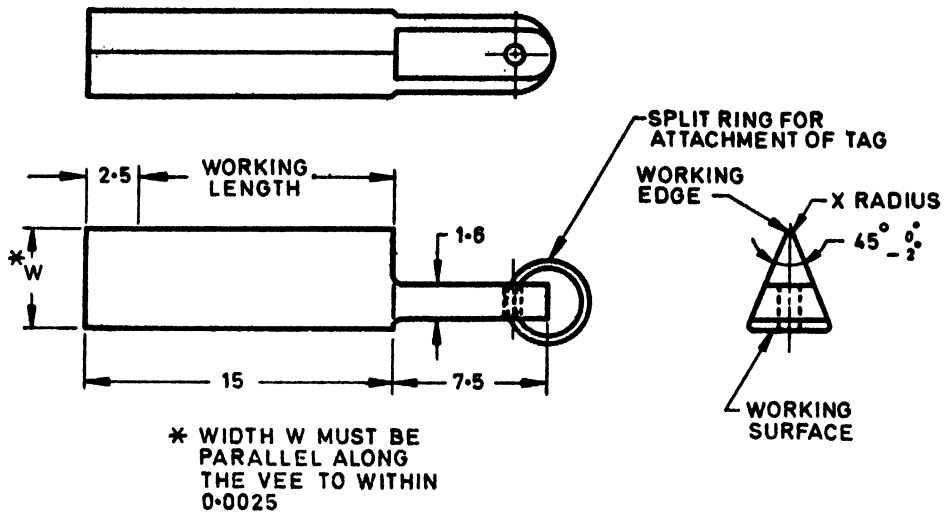
2. Terminology

2.1 *Pairs of Screw Thread Measuring Prisms* — When two prisms are used for measuring the minor diameter of a screw thread they are referred to in this standard as a 'pair'.

3. Material and Finish

3.1 Thread measuring prisms shall be made of steel and shall be hardened. A hardness value of 700 *HV* is recommended.

3.2 The working surface, that is, the back face of the prism opposite to the round edge (*see* Fig. 1) shall have a lapped finish, free from any blemishes, such as scratches, pits and rust stains.



All dimensions in millimetres.

FIG. 1 PRISMS FOR MINOR DIAMETER MEASUREMENT

4. Form and General Dimensions

4.1 *Form* — The general form of the prisms shall be as shown in Fig. 1.

4.2 Dimensions of prisms suitable for different sizes of ISO metric external threads are given in Fig. 1 and Table 1.

TABLE 1 DIMENSIONS OF PRISMS

Designation Size	Limits for Radius *X*	Dimension *W* Not Less Than	Suitable for ISO Metric Screws of Pitch
(1)	(2)	(3)	(4)
		mm	mm
A	0·01 to 0·025	3	0·35 to 0·5
B	0·04 ,, 0·05	3	0·6 ,, 0·8
C	0·09 ,, 0·10	4	1 ,, 1·75
D	0·2 ,, 0·25	5	2 ,, 8

Adopted 22 June 1971

BUREAU OF INDIAN STANDARDS
MANAK BHAVAN, 9 BAHADUR SHAH ZAFAR MARG
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4.3 *Overall Length* — Recommended approximate overall length of screw thread measuring prisms is given in Fig. 1, that is, 15 + 7·5 mm or 22·5 mm.

4.4 *Working Length* — The working length is 10 mm less than the overall length and starts at a distance of 2·5 mm from one end and 7·5 mm from other end as shown in Fig. 1.

4.5 The requirements for accuracy and hardness shall apply to the working length.

5. Accuracy (for All the 4 Grades)

5.1 *Straightness* — When the working edge of the prism is held against a slip gauge at any position of its length by a cylindrical contact face exerting a force of 200 g, no light shall be visible between the thread measuring prism and the slip gauge over a length of 8 mm (*see* Fig. 2).

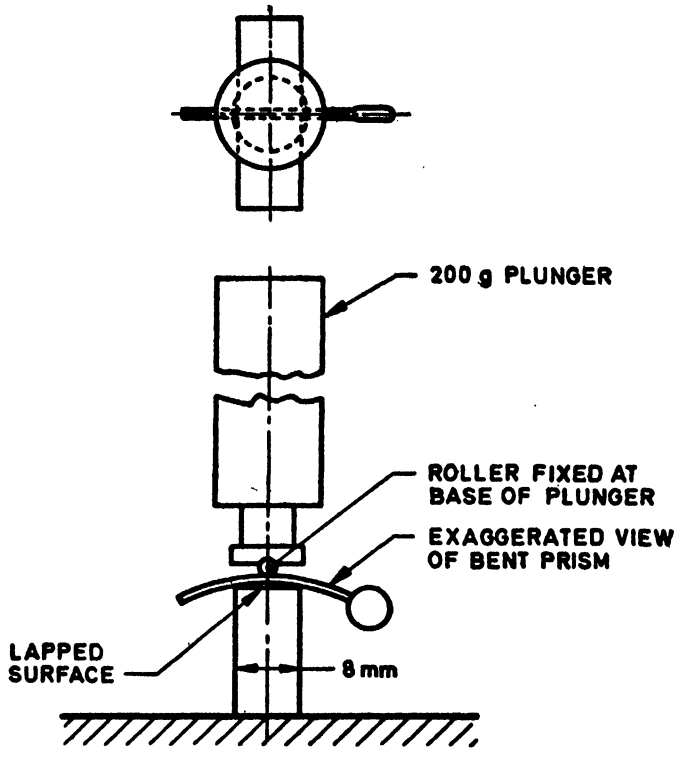

FIG. 2 TESTING OF STRAIGHTNESS OF PRISMS

5.2 *Parallelism of Working Edge to Working Surface* — The working edge shall be parallel to working surface within 0·002 5 mm.

5.3 *Flatness of Working Surface* — The working surface, that is, the back face shall be flat to within 0·000 5 mm.

5.4 A certificate giving the deviations of the dimensions of individual prisms from their nominal width shall be issued with each prism.

6. Designation — ISO metric screw thread mesuring prisms shall be designated by the designation size and this specification number.

Example:

An ISO metric screw thread measuring prism of designation size B shall be designated as:

Measuring prism B — IS : 6150

7. Identification

7.1 *Tags* — They shall be round shaped.

7.2 The tag shall be attached by a single link to the prism or directly in the case of larger sizes. The use of split ring for attachment purposes is permissible (*see* Fig. 1).

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TO
IS 6150 : 1971 SPECIFICATION FOR ISO METRIC SCREW THREAD MEASURING PRISMS

(*Page* 3, *clause* 7.3) — Substitute the following for the existing clause :

'7.3 *Marking* — Tags shall be marked with designation giving the form and pitch of the thread for which the prisms are intended and also a manufacturer identification mark or name/trade mark as shown in Fig. 3.

(*Page* 3, *Fig.* 3) — Substitute ' MANUFACTURER IDENTIFICATION MARK OR NAME/TRADE MARK' *for* 'SERIAL NO. OF MANUFACTURER'.

(LMD 05)

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7.3 *Marking* — Tags shall be marked with the designation giving the form, and pitch of the thread for which the prisms are intended and also a serial number of the manufacturer as shown in Fig. 3.

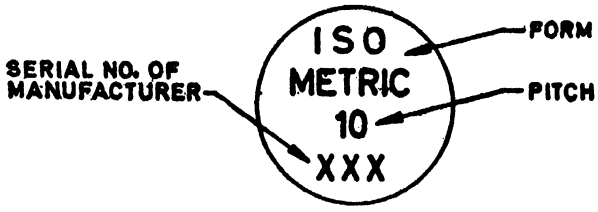

FIG. 3 IDENTIFICATION TAG

7.4 *Certification Marking* — Details available with the Bureau of Indian Standards.

8. Packing — Each pair of prisms shall be supplied in a suitable container protected against climatic variations.

EXPLANATORY NOTE

Screw thread measuring prisms (also known as vee-pieces) are used for measuring the minor diameter of external screw threads. These prisms are usually hardened steel vee-pieces having an angle of about 45°, with the front edge finished to a radius somewhat smaller than that of the curvature at the roots of the finest thread which it is desired to measure.

Such prisms are usually made in a series of different sizes to cover the range of screws usually met with.

Measurements for minor diameter are usually taken by the help of a micrometer over the outsides of a pair of prisms seating in the grooves on opposite sides of the screw plug gauge. For this, it is essential that the micrometer should be held at right angles, to the axis of the screw gauge being measured. This is best secured by using a floating micrometer diameter measuring machine (see below):

Set the floating micrometer diameter measuring machine to give any fixed reading R_S over the prisms mounted on either side of a standard cylinder. Readings R_G are then obtained across the prisms seated in the thread grooves on opposite sides of the gauge. Then if W is the known size of the standard prism we have,

Minor diameter of the screw gauged,

$$K = W + R_G - R_S$$

Considerable assistance in the preparation of the standard has been taken from NPL Notes on Applied Science No. 1 — Gauging and Measuring Screw Threads.

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